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City of Greenbrier <sup>1st box 6/14</sup> <sup>6/17</sup> <sup>MAF 5-10</sup> <sup>APR 6/18/10</sup> <sup>JEH 6/21</sup>

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2010 APR 21 AM 9:57

April 16, 2010

Tennessee Department of Environment and Conservation

711 R. S. Gass Blvd

Nashville, TN 37243

Re: Notice of Violation – Feb 23, 2010

NPDES Permit Tracking Number TNS077810

City of Greenbrier Storm Water Management Program Audit

Dear Sirs:

This is in response to your letter of February 23, 2010 relating to our Storm Water Management Plan. The City of Greenbrier is actively engaging in the implementation of necessary actions to manage storm water runoff affecting streams and tributaries within our community, as directed by the requirements of the subject permit. They are as follows:

1. Public Education and Outreach:

Effective immediately, an aggressive plan is implemented to educate the citizens of Greenbrier on the benefits of reducing pollutants in storm water runoff. This includes advertising on the City public access cable television station, the City of Greenbrier website, and other public awareness measures. In addition, all City committees and commissions will undergo specific training to fully understand their roles in implementing these requirements.

2. Public Participation / Involvement:

The recruitment of citizen advocates of recycling efforts to reduce the amount of trash and potential pollutants entering the groundwater and storm water runoff. This includes the expansion of current recycling collection to include used motor oil and other potentially hazardous materials, such as batteries, which are sometimes illegally discarded by residents. This will also include the involvement of citizen groups to

participate in City-wide trash and pollutant removal as well as identifying areas of potential erosion.

3. Illicit Discharge Detection and Elimination:

The City has begun an aggressive identification process to locate and abate all illegal activities that could adversely affect the quality of water in all streams and tributaries. This process will also target the removal of illegal collection points within residential properties that lead to the introduction of pollutants into runoff. These property owners are being notified of the problem and likelihood of pollutants entering streams and tributaries adjacent to these properties and cited as appropriate.

4. Construction site Storm Water Runoff Control:

The City of Greenbrier Planning and Zoning Commission is currently refining regulations concerning new development and construction management practices which affect storm water runoff control. This will not only include new development, but also continuing construction in existing developments. Special emphasis will be focused on all activities which involve the disturbance of soil in areas in excess of ¼ acre.

5. Post Construction Storm Water Management:

The permitting operations of the City of Greenbrier are being refined and modified to include post construction actions required to ensure runoff control is continued after all construction is completed and site work is returned to normal. This will include the introduction of permanent barriers for the filtration of trash and silt which may be present after final construction has occurred, and a plan for continued maintenance of these barriers.

6. Pollution Prevention For Municipal Operations:

A process in practice to contain and eliminate possible pollutants from municipal operations involves the City equipment which is used and stored for street and sewer operations. These vehicles and equipment have the potential to develop leaks in lubrication and hydraulic systems that, if not contained, could enter the groundwater through storm water runoff. Current practice is to collect any leakage in a porous parking/storage area and recycling this material every six months. In addition, municipal departments and their employees will participate in city wide efforts to improve water quality.

City of Greenbrier

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These actions are considered to show, at a minimum, our intention to ensure continued improvement in storm water management for the City of Greenbrier. We have attached copies of our existing and proposed Storm Water Management Plans for your use.

Thank you for your consideration.

Sincerely

A handwritten signature in black ink, appearing to read "B. Wilson", followed by a long horizontal line extending to the right.

Mayor Billy Wilson

Proposed

**CITY OF GREENBRIER  
STORMWATER  
ORDINANCE**

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**ORDINANCE NO. \_\_\_\_\_**

**CITY OF GREENBRIER**

**AN ORDINANCE TO ESTABLISH STORMWATER MANAGEMENT REGULATIONS  
FOR THE CITY OF GREENBRIER, TENNESSEE**

**SECTION 1. GENERAL PROPOSES**

(1). **Purpose.** It is the purpose of this ordinance to:

- (a) Protect, maintain, and enhance the environment of the City of Greenbrier and the public health, safety and the general welfare of the citizens of the city, by controlling discharges of pollutants to the city's stormwater system and to maintain and improve the quality of the receiving waters into which the stormwater outfalls flow, including, without limitation, lakes, rivers, streams, ponds, wetlands, and groundwater of the city.
- (b) Enable the City of Greenbrier to comply with the National Pollution Discharge Elimination System permit (NPDES) and applicable regulations, 40 CFR §122.26 for stormwater discharges.
- (c) Allow the City of Greenbrier to exercise the powers granted in Tennessee Code Annotated §68-221-1105, which provides that, among other powers municipalities have with respect to stormwater facilities, is the power by ordinance or resolution to:
  - (1) Exercise general regulation over the planning, location, construction, and operation and maintenance of stormwater facilities in the municipality, whether or not owned and operated by the municipality;

- (2) Adopt any rules and regulations deemed necessary to accomplish the purposes of this statute, including the adoption of a system of fees for services and permits;
- (3) Establish standards to regulate the quantity of stormwater discharged and to regulate stormwater contaminants as may be necessary to protect water quality;
- (4) Review and approve plans and plats for stormwater management in proposed subdivisions or commercial developments;
- (5) Issue permits for stormwater discharges, or for the construction, alteration, extension, or repair of stormwater facilities;
- (6) Suspend or revoke permits when it is determined that the permittee has violated any applicable ordinance, resolution, or condition of the permit;
- (7) Regulate and prohibit discharges into stormwater facilities of sanitary, industrial, or commercial sewage or waters that have otherwise been contaminated; and
- (8) Expend funds to remediate or mitigate the detrimental effects of contaminated land or other sources of stormwater contamination, whether public or private.

(2). **Administering entity.**

The Greenbrier Building and Codes Official shall administer the provisions of this ordinance.

**SECTION 2. DEFINITIONS**

For the purpose of this chapter, the following definitions shall apply: Words used in the singular shall include the plural, and the plural shall include the singular; words used in the present tense shall include the future tense. The word "shall" is mandatory and not discretionary. The word "may" is permissive. Words not defined in this section shall be construed to have the meaning given by common and ordinary use as defined in the latest edition of Webster's Dictionary.

- (1) "As built plans" means drawings depicting conditions as they were actually constructed.
- (2) "Best management practices" or "BMPs" are physical, structural, and/or managerial practices that, when used singly or in combination, prevent or reduce pollution of water, that have been approved by the City of Greenbrier, and that have been incorporated by reference into this ordinance as if fully set out therein.
- (3) "Channel" means a natural or artificial watercourse with a definite bed and banks that conducts flowing water continuously or periodically.
- (4) "Community water" means any and all rivers, streams, creeks, branches, lakes, reservoirs, ponds, drainage systems, springs, wetlands, wells and other bodies of surface or subsurface water, natural or artificial, lying within or forming a part of the boundaries of the City of Greenbrier.
- (5) "Contaminant" means any physical, chemical, biological, or radiological substance or matter in water.
- (6) "Design storm event" means a hypothetical storm event, of a given frequency interval and duration, used in the analysis and design of a stormwater facility.
- (7) "Discharge" means dispose, deposit, spill, pour, inject, seep, dump, leak or place by any means, or that which is disposed, deposited, spilled, poured, injected,

seeped, dumped, leaked, or placed by any means including any direct or indirect entry of any solid or liquid matter into the municipal separate storm sewer system.

- (8) "Easement" means an acquired privilege or right of use or enjoyment that a person, party, firm, corporation, municipality or other legal entity has in the land of another.
- (9) "Erosion" means the removal of soil particles by the action of water, wind, ice or other geological agents, whether naturally occurring or acting in conjunction with or promoted by anthropogenic activities or effects.
- (10) "Erosion and sediment control plan" means a written plan (including drawings or other graphic representations) that is designed to minimize the accelerated erosion and sediment runoff at a site during construction activities.
- (11) "Hotspot" ("priority area") means an area where land use or activities generate highly contaminated runoff, with concentrations of pollutants in excess of those typically found in stormwater.
- (12) "Illicit connections" means illegal and/or unauthorized connections to the municipal separate stormwater system whether or not such connections result in discharges into that system.
- (13) "Illicit discharge" means any discharge to the municipal separate storm sewer system that is not composed entirely of stormwater and not specifically exempted under §3(3).
- (14) "Land disturbing activity" means any activity on property that results in a change in the existing soil cover (both vegetative and non-vegetative) and/or the existing soil topography. Land-disturbing activities include, but are not limited to,

development, re-development, demolition, construction, reconstruction, clearing, grading, filling, and excavation.

- (15) “Maintenance” means any activity that is necessary to keep a stormwater facility in good working order so as to function as designed. Maintenance shall include complete reconstruction of a stormwater facility if reconstruction is needed in order to restore the facility to its original operational design parameters. Maintenance shall also include the correction of any problem on the site property that may directly impair the functions of the stormwater facility.
- (16) “Maintenance agreement” means a document recorded in the land records that acts as a property deed restriction, and which provides for long-term maintenance of stormwater management practices.
- (17) “Municipal separate storm sewer system (MS4)” (“Municipal separate stormwater system”) means the conveyances owned or operated by the municipality for the collection and transportation of stormwater, including the roads and streets and their drainage systems, catch basins, curbs, gutters, ditches, man-made channels, and storm drains.
- (18) “National Pollutant Discharge Elimination System permit” or “NPDES permit” means a permit issued pursuant to 33 U.S.C. 1342.
- (19) “Off-site facility” means a structural BMP located outside the subject property boundary described in the permit application for land development activity.
- (20) “On-site facility” means a structural BMP located within the subject property boundary described in the permit application for land development activity.

- (21) "Peak flow" means the maximum instantaneous rate of flow of water at a particular point resulting from a storm event.
- (22) "Person" means any and all persons, natural or artificial, including any individual, firm or association and any municipal or private corporation organized or existing under the laws of this or any other state or country.
- (23) "Priority area" means "hot spot" as defined in § 2(11).
- (24) "Runoff" means that portion of the precipitation on a drainage area that is discharged from the area into the municipal separate stormwater system.
- (25) "Sediment" means solid material, both mineral and organic, that is in suspension, is being transported, or has been moved from its site of origin by air, water, gravity, or ice and has come to rest on the earth's surface either above or below sea level.
- (26) "Sedimentation" means soil particles suspended in stormwater that can settle in stream beds and disrupt the natural flow of the stream.
- (27) "Soils Report" means a study of soils on a subject property with the primary purpose of characterizing and describing the soils. The soils report shall be prepared by a qualified soils engineer, who shall be directly involved in the soil characterization either by performing the investigation or by directly supervising employees.
- (28) "Stabilization" means providing adequate measures, vegetative and/or structural, that will prevent erosion from occurring.
- (29) "Stormwater" means stormwater runoff, snow melt runoff, surface runoff, street wash waters related to street cleaning or maintenance, infiltration and drainage.

- (30) "Stormwater management" means the programs to maintain quality and quantity of stormwater runoff to pre-development levels.
- (31) "Stormwater management facilities" means the drainage structures, conduits, ditches, combined sewers, sewers, and all device appurtenances by means of which stormwater is collected, transported, pumped, treated or disposed of.
- (32) "Stormwater management plan" means the set of drawings and other documents that comprise all the information and specifications for the programs, drainage systems, structures, BMPs, concepts and techniques intended to maintain or restore quality and quantity of stormwater runoff to pre-development levels.
- (33) "Stormwater runoff" means flow on the surface of the ground, resulting from precipitation.
- (34) "Stormwater utility" means the stormwater utility created by ordinance of the city to administer the stormwater management ordinance, and other stormwater rules and regulations adopted by the municipality.
- (35) "Structural BMPs" means devices that are constructed to provide control of stormwater runoff.
- (36) "Surface water" includes waters upon the surface of the earth in bounds created naturally or artificially including, but not limited to, streams, other water courses, lakes and reservoirs.
- (37) "Watercourse" means a permanent or intermittent stream or other body of water, either natural or man-made, which gathers or carries surface water.
- (38) "Watershed" means all the land area that contributes runoff to a particular point along a waterway.

### **SECTION 3. LAND DISRUPTION PERMITS.**

(1). When required.

- (a) Every person will be required to obtain a land disturbance permit from the City of Greenbrier in the following cases:

- (1) Land disturbing activity disturbs one-fourth (1/4) or more acres of land;
- (2) Land disturbing activity of less than one-fourth (1/4) acre of land if such activity is part of a larger common plan of development that affects one-fourth (1/4) or more acre of land;
- (3) Land disturbing activity of less than one-fourth (1/4) acre of land, if in the discretion of the City of Greenbrier such activity poses a unique threat to water, or public health or safety;
- (4) The creation and use of borrow pits.

- (2). Building permit. No building permit shall be issued until the applicant has obtained a land disturbance permit where the same is required by this ordinance.

- (3). Exemptions. The following activities are exempt from the permit requirement:

- (a) Any emergency activity that is immediately necessary for the protection of life, property, or natural resources.
- (b) Existing nursery and agricultural operations conducted as a permitted main or accessory use.
- (c) Any logging or agricultural activity that is consistent with an approved farm conservation plan or a timber management plan prepared or approved by the State of Tennessee.
- (d) Additions or modifications to existing single family structures.

(4). Application for a land disturbance permit.

(a) Each application shall include the following:

- (1) Name of applicant;
- (2) Business or residence address of applicant;
- (3) Name, address and telephone number of the owner of the property of record in the office of the assessor of property;
- (4) Address and legal description of subject property including the tax reference number and parcel number of the subject property;
- (5) Name, address and telephone number of the contractor and any subcontractor(s) who shall perform the land disturbing activity and who shall implement the erosion and sediment control plan;
- (6) A statement indicating the nature, extent and purpose of the land disturbing activity including the size of the area for which the permit shall be applicable and a schedule for the starting and completion dates of the land disturbing activity.
- (7) Where the property includes a sinkhole, the applicant shall obtain from the Tennessee Department of Environment and Conservation appropriate permits.
- (8) The applicant shall obtain from any other state or federal agency any other appropriate environmental permits that pertain to the property. However, the inclusion of those permits in the application shall not foreclose the City of Greenbrier from imposing additional development requirements

and conditions, commensurate with this ordinance, on the development of property covered by those permits.

(b) Each application shall be accompanied by:

- (1) A sediment and erosion control plan as described in §5(5).
- (2) A stormwater management plan as described in §5(4), providing for stormwater management during the land disturbing activity and after the activity has been completed.
- (3) Each application for a land disturbance permit shall be accompanied by payment of land disturbance permit and other stormwater management fees, which shall be set by resolution or ordinance.

(5). Review and approval of application.

(a) The Building and Codes Official will review each application for a land disturbance permit to determine its conformance with the provisions of this ordinance. Within 7 days after receiving an application, the Building and Codes Official shall provide one of the following responses in writing:

- (1) Approval of the permit application;
- (2) Approval of the permit application, subject to such reasonable conditions as may be necessary to secure substantially the objectives of this ordinance, and issue the permit subject to these conditions; or
- (3) Denial of the permit application, indicating the reason(s) for the denial.

(b) If the City of Greenbrier has granted conditional approval of the permit, the applicant shall submit a revised plan that conforms to the conditions established by the City of Greenbrier. However, the applicant shall be allowed to proceed

with his land disturbing activity so long as it conforms to conditions established by the City of Greenbrier.

- (c) No development plans will be released until the land disturbance permit has been approved.

(6). Permit duration.

Every land disturbance permit shall expire and become null and void if substantial work authorized by such permit has not commenced within one hundred eighty (180) calendar days of issuance, or is not complete within eighteen (18) months from the date of the commencement of construction.

(7). Notice of construction.

The applicant must notify the Building and Codes Official ten (10) working days in advance of the commencement of construction. Regular inspections of the stormwater management system construction shall be conducted by the Building and Codes Official. All inspections shall be documented and written reports prepared that contain the following information:

- (1) The date and location of the inspection;
- (2) Whether construction is in compliance with the approved stormwater management plan;
- (3) Variations from the approved construction specifications;
- (4) Any violations that exist.

(8). Performance bonds.

- (a) The City of Greenbrier may, at its discretion, require the submittal of a performance security or performance bond prior to issuance of a permit in order

to ensure that the stormwater practices are installed by the permit holder as required by the approved stormwater management plan. The amount of the installation performance security or performance bond shall be the total estimated construction cost of the structural BMPs approved under the permit plus any reasonably foreseeable additional related costs, e.g., for damages or enforcement. The performance security shall contain forfeiture provisions for failure to complete work specified in the stormwater management plan. The applicant shall provide an itemized construction cost estimate complete with unit prices which shall be subject to acceptance, amendment or rejection by the City of Greenbrier. Alternatively the City of Greenbrier shall have the right to calculate the cost of construction cost estimates.

- (b) The performance security or performance bond shall be released in full only upon submission of as-built plans and written certification by a registered professional engineer licensed to practice in Tennessee that the structural BMP has been installed in accordance with the approved plan and other applicable provisions of this ordinance. The Building and Codes Official will make a final inspection of the structural BMP to ensure that it is in compliance with the approved plan and the provisions of this ordinance. Provisions for a partial pro-rata release of the performance security or performance bond based on the completion of various development stages can be made at the discretion of the City of Greenbrier.

#### **SECTION 4. STORMWATER SYSTEM DESIGN AND MANAGEMENT STANDARDS.**

- (1) Stormwater design or BMP manual.

- (a) Adoption. The municipality adopts as its stormwater design and best management practices (BMP) manual the following publications, which are incorporated by reference in this ordinance as is fully set out herein:
    - (1) TDEC Sediment and Erosion Control Manual
    - (2) TDEC Manual for Post Construction
  - (b) This manual includes a list of acceptable BMPs including the specific design performance criteria and operation and maintenance requirements for each stormwater practice. The manual may be updated and expanded from time to time, at the discretion of the governing body of the municipality, upon the recommendation of the City of Greenbrier, based on improvements in engineering, science, monitory and local maintenance experience. Stormwater facilities that are designed, constructed and maintained in accordance with these BMP criteria will be presumed to meet the minimum water quality performance standards.
- (2). General performance criteria for stormwater management. Unless granted a waiver or judged by the City of Greenbrier to be exempt, the following post construction performance criteria shall be addressed for stormwater management at all sites:
- (a) All site designs shall control the peak flow rates of stormwater discharge associated with design storms specified in this ordinance or in the BMP manual and reduce the generation of post construction stormwater runoff to pre-construction levels. These practices should seek to utilize pervious areas for stormwater treatment and to infiltrate stormwater runoff from driveways,

sidewalks, rooftops, parking lots, and landscaped areas to the maximum extent practical to provide treatment for both water quality and quantity.

- (b) To protect stream channels from degradation, specific channel protection criteria shall be provided as prescribed in the BMP manual.
  - (c) Stormwater discharges to critical areas with sensitive resources (i.e., cold water fisheries, shellfish beds, swimming beaches, recharge areas, water supply reservoirs) may be subject to additional performance criteria, or may need to utilize or restrict certain stormwater management practices.
  - (d) Stormwater discharges from “hot spots” may require the application of specific structural BMPs and pollution prevention practices.
  - (e) Prior to or during the site design process, applicants for land disturbance permits shall consult with the City of Greenbrier to determine if they are subject to additional stormwater design requirements.
  - (f) The calculations for determining peak flows as found in the BMP manual shall be used for sizing all stormwater facilities.
- (3). Minimum control requirements.
- (a) Stormwater designs shall meet the multi-stage storm frequency storage requirements as identified in the BMP manual unless the City of Greenbrier has granted the applicant a full or partial waiver for a particular BMP under § 4.
  - (b) If hydrologic or topographic conditions warrant greater control than that provided by the minimum control requirements, the City of Greenbrier may impose any and all additional requirements deemed necessary to control the volume, timing, and rate of runoff.

- (4). Stormwater management plan requirements. The stormwater management plan shall include sufficient information to allow the City of Greenbrier to evaluate the environmental characteristics of the project site, the potential impacts of all proposed development of the site, both present and future, on the water resources, and the effectiveness and acceptability of the measures proposed for managing stormwater generated at the project site. To accomplish this goal the stormwater management plan shall include the following:
- (a) Topographic Base Map: A 1" = 50 feet topographic base map of the site which extends a minimum of 25 feet beyond the limits of the proposed development and indicates:
- (1) Existing surface water drainage including streams, ponds, culverts, ditches, sink holes, wetlands; and the type, size, elevation, etc., of nearest upstream and downstream drainage structures;
  - (2) Current land use including all existing structures, locations of utilities, roads, and easements;
  - (3) All other existing significant natural and artificial features;
  - (4) Proposed land use with tabulation of the percentage of surface area to be adapted to various uses; drainage patterns; locations of utilities, roads and easements; the limits of clearing and grading;
  - (5) Proposed structural BMPs;
  - (6) A written description of the site plan and justification of proposed changes in natural conditions may also be required.

(b) Calculations: Hydrologic and hydraulic design calculations for the pre-development and post-development conditions for the design storms specified in the BMP manual. These calculations must show that the proposed stormwater management measures are capable of controlling runoff from the site in compliance with this ordinance and the guidelines of the BMP manual. Such calculations shall include:

- (1) A description of the design storm frequency, duration, and intensity where applicable;
- (2) Time of concentration;
- (3) Soil curve numbers or runoff coefficients including assumed soil moisture conditions;
- (4) Peak runoff rates and total runoff volumes for each watershed area;
- (5) Infiltration rates, where applicable;
- (6) Culvert, stormwater sewer, ditch and/or other stormwater conveyance capacities;
- (7) Flow velocities;
- (8) Data on the increase in rate and volume of runoff for the design storms referenced in the BMP manual; and
- (9) Documentation of sources for all computation methods and field test results.

(c) Soils Information: If a stormwater management control measure depends on the hydrologic properties of soils (e.g., infiltration basins), then a soils report shall be submitted. The soils report shall be based on on-site boring logs or soil pit profiles

and soil survey reports. The number and location of required soil borings or soil pits shall be determined based on what is needed to determine the suitability and distribution of soil types present at the location of the control measure.

- (d) **Maintenance and Repair Plan:** The design and planning of all stormwater management facilities shall include detailed maintenance and repair procedures to ensure their continued performance. These plans will identify the parts or components of a stormwater management facility that need to be maintained and the equipment and skills or training necessary. Provisions for the periodic review and evaluation of the effectiveness of the maintenance program and the need for revisions or additional maintenance procedures shall be included in the plan. A permanent elevation benchmark shall be identified in the plans to assist in the periodic inspection of the facility.
- (e) **Landscaping Plan:** The applicant must present a detailed plan for management of vegetation at the site after construction is finished, including who will be responsible for the maintenance of vegetation at the site and what practices will be employed to ensure that adequate vegetative cover is preserved. Where it is required by the BMP, this plan must be prepared by a registered landscape architect licensed in Tennessee.
- (f) **Maintenance Easements:** The applicant must ensure access to the site for the purpose of inspection and repair by securing all the maintenance easements needed. These easements must be binding on the current property owner and all subsequent owners of the property and must be properly recorded in the land record.

(g) Maintenance Agreement:

- (1) The owner of property to be served by an on-site stormwater management facility must execute an inspection and maintenance agreement that shall operate as a deed restriction binding on the current property owner and all subsequent property owners.
- (2) The maintenance agreement shall:
  - (a) Assign responsibility for the maintenance and repair of the stormwater facility to the owner of the property upon which the facility is located and be recorded as such on the plat for the property by appropriate notation.
  - (b) Provide for a periodic inspection by the property owner for the purpose of documenting maintenance and repair needs and ensure compliance with the purpose and requirements of this ordinance. The property owner will arrange for this inspection to be conducted by a registered professional engineer licensed to practice in the State of Tennessee who will submit a sealed report of the inspection to the City of Greenbrier. It shall also grant permission to the city to enter the property at reasonable times and to inspect the stormwater facility to ensure that it is being properly maintained.
  - (c) Provide that the minimum maintenance and repair needs include, but are not limited to: the removal of silt, litter and other debris, the cutting of grass, grass cuttings and vegetation removal, and the

replacement of landscape vegetation, in detention and retention basins, and inlets and drainage pipes and any other stormwater facilities. It shall also provide that the property owner shall be responsible for additional maintenance and repair needs consistent with the needs and standards outlined in the BMP manual.

- (d) Provide that maintenance needs must be addressed in a timely manner, on a schedule to be determined by the City of Greenbrier.
- (e) Provide that if the property is not maintained or repaired within the prescribed schedule, the City of Greenbrier shall perform the maintenance and repair at its expense, and bill the same to the property owner. The maintenance agreement shall also provide that the City of Greenbrier stormwater utility's cost of performing the maintenance shall be a lien against the property.

- (3) The municipality shall have the discretion to accept the dedication of any existing or future stormwater management facility, provided such facility meets the requirements of this ordinance, and includes adequate and perpetual access and sufficient areas, by easement or otherwise, for inspection and regular maintenance. Any stormwater facility accepted by the municipality must also meet the municipality's construction standards and any other standards and specifications that apply to the particular stormwater facility in question.

- (h) Sediment and Erosion Control Plans:

The applicant must prepare a sediment and erosion control plan for all construction activities that complies with §5(5) below.

(5). Sediment and erosion control plan requirements.

The sediment and erosion control plan shall accurately describe the potential for soil erosion and sedimentation problems resulting from land disturbing activity and shall explain and illustrate the measures that are to be taken to control these problems. The length and complexity of the plan is to be commensurate with the size of the project, severity of the site condition, and potential for off-site damage. The plan shall be sealed by a registered professional engineer licensed in the state of Tennessee. The plan shall also conform to the requirements found in the BMP manual, and shall include at least the following:

- (a) Project Description - Briefly describe the intended project and proposed land disturbing activity including number of units and structures to be constructed and infrastructure required.
- (b) A topographic map with contour intervals of five (5) feet or less showing present conditions and proposed contours resulting from land disturbing activity.
- (c) All existing drainage ways, including intermittent and wet-weather. Include any designated floodways or flood plains.
- (d) A general description of existing land cover. Individual trees and shrubs do not need to be identified.
- (e) Stands of existing trees as they are to be preserved upon project completion, specifying their general location on the property. Differentiation shall be made between existing trees to be preserved, trees to be removed and proposed planted

trees. Tree protection measures must be identified, and the diameter of the area involved must also be identified on the plan and shown to scale. Information shall be supplied concerning the proposed destruction of exceptional and historic trees in setbacks and buffer strips, where they exist. Complete landscape plans may be submitted separately. The plan must include the sequence of implementation for tree protection measures.

- (f) Approximate limits of proposed clearing, grading and filling.
- (g) Approximate flows of existing stormwater leaving any portion of the site.
- (h) A general description of existing soil types and characteristics and any anticipated soil erosion and sedimentation problems resulting from existing characteristics.
- (i) Location, size and layout of proposed stormwater and sedimentation control improvements.
- (j) Proposed drainage network.
- (k) Proposed drain tile or waterway sizes.
- (l) Approximate flows leaving site after construction and incorporating water run-off mitigation measures. The evaluation must include projected effects on property adjoining the site and on existing drainage facilities and systems. The plan must address the adequacy of outfalls from the development: when water is concentrated, what is the capacity of waterways, if any, accepting stormwater off-site; and what measures, including infiltration, sheeting into buffers, etc., are going to be used to prevent the scouring of waterways and drainage areas off-site, etc.

- (m) The projected sequence of work represented by the grading, drainage and sedimentation and erosion control plans as related to other major items of construction, beginning with the initiation of excavation and including the construction of any sediment basins or retention facilities or any other structural BMP's.
- (n) Specific remediation measures to prevent erosion and sedimentation run-off. Plans shall include detailed drawings of all control measures used; stabilization measures including vegetation and non-vegetation measures, both temporary and permanent, will be detailed. Detailed construction notes and a maintenance schedule shall be included for all control measures in the plan.
- (o) Specific details for: the construction of rock pads, wash down pads, and settling basins for controlling erosion; road access points; eliminating or keeping soil, sediment, and debris on streets and public ways at a level acceptable to the City of Greenbrier. Soil, sediment, and debris brought onto streets and public ways must be removed by the end of the work day by machine, broom or shovel to the satisfaction of the City of Greenbrier. Failure to remove the sediment, soil or debris shall be deemed a violation of this ordinance.
- (p) Proposed structures; location (to the extent possible) and identification of any proposed additional buildings, structures or development on the site.
- (q) A description of on-site measures to be taken to recharge surface water into the ground water system through infiltration.

## **SECTION 5. POST CONSTRUCTION.**

- (1). As built plans.

All applicants are required to submit actual as built plans for any structures located on-site after final construction is completed. The plan must show the final design specifications for all stormwater management facilities and must be sealed by a registered professional engineer licensed to practice in Tennessee. A final inspection by the City of Greenbrier is required before any performance security or performance bond will be released. The City of Greenbrier shall have the discretion to adopt provisions for a partial pro-rata release of the performance security or performance bond on the completion of various stages of development. In addition, occupation permits shall not be granted until corrections to all BMP's have been made and accepted by the City of Greenbrier.

(2). Landscaping and stabilization requirements.

(a) Any area of land from which the natural vegetative cover has been either partially or wholly cleared by development activities shall be revegetated according to a schedule approved by the City of Greenbrier. The following criteria shall apply to revegetation efforts:

- (1) Reseeding must be done with an annual or perennial cover crop accompanied by placement of straw mulch or its equivalent of sufficient coverage to control erosion until such time as the cover crop is established over ninety percent (90%) of the seeded area.
- (2) Replanting with native woody and herbaceous vegetation must be accompanied by placement of straw mulch or its equivalent of sufficient coverage to control erosion until the plantings are established and are capable of controlling erosion.

- (3) Any area of revegetation must exhibit survival of a minimum of seventy-five percent (75%) of the cover crop throughout the year immediately following revegetation. Revegetation must be repeated in successive years until the minimum seventy-five percent (75%) survival for one (1) year is achieved.
- (b) In addition to the above requirements, a landscaping plan must be submitted with the final design describing the vegetative stabilization and management techniques to be used at a site after construction is completed. This plan will explain not only how the site will be stabilized after construction, but who will be responsible for the maintenance of vegetation at the site and what practices will be employed to ensure that adequate vegetative cover is preserved.
- (3). Inspection of stormwater management facilities. Periodic inspections of facilities shall be performed as provided for in §5(4)(g)(2)(b).
- (4). Records of installation and maintenance activities. Parties responsible for the operation and maintenance of a stormwater management facility shall make records of the installation of the stormwater facility, and of all maintenance and repairs to the facility, and shall retain the records for at least 7 years. These records shall be made available to the City of Greenbrier during inspection of the facility and at other reasonable times upon request.
- (5). Failure to meet or maintain design or maintenance standards. If a responsible party fails or refuses to meet the design or maintenance standards required for stormwater facilities under this ordinance, the City of Greenbrier, after reasonable notice, may correct a violation of the design standards or maintenance needs by performing all necessary work

to place the facility in proper working condition. In the event that the stormwater management facility becomes a danger to public safety or public health, the City of Greenbrier shall notify in writing the party responsible for maintenance of the stormwater management facility. Upon receipt of that notice, the responsible person shall have 30 days to affect maintenance and repair of the facility in an approved manner. In the event that corrective action is not undertaken within that time, the City of Greenbrier may take necessary corrective action. The cost of any action by the City of Greenbrier under this section shall be charged to the responsible party.

#### **SECTION 6. WAIVERS.**

(1). General.

Every applicant shall provide for post construction stormwater management as required by this Ordinance, unless a written request is filed to waive this requirement. Requests to waive the stormwater management plan requirements shall be submitted to the City of Greenbrier for approval.

(2). Conditions for waiver. The minimum requirements for stormwater management may be waived in whole or in part upon written request of the applicant, provided that at least one of the following conditions applies:

- (a) It can be demonstrated that the proposed development is not likely to impair attainment of the objectives of this ordinance.
- (b) Alternative minimum requirements for on-site management of stormwater discharges have been established in a stormwater management plan that has been approved by the City of Greenbrier.

- (c) Provisions are made to manage stormwater by an off-site facility. The off-site facility must be in place and designed to provide the level of stormwater control that is equal to or greater than that which would be afforded by on-site practices. Further, the facility must be operated and maintained by an entity that is legally obligated to continue the operation and maintenance of the facility.
- (3). Downstream damage, etc. prohibited. In order to receive a waiver, the applicant must demonstrate to the satisfaction of the City of Greenbrier that the waiver will not lead to any of the following conditions downstream:
  - (a) Deterioration of existing culverts, bridges, dams, and other structures;
  - (b) Degradation of biological functions or habitat;
  - (c) Accelerated streambank or streambed erosion or siltation;
  - (d) Increased threat of flood damage to public health, life or property.
- (4). Land disturbance permit not to be issued where waiver requested. No land disturbance permit shall be issued where a waiver has been requested until the waiver is granted. If no waiver is granted, the plans must be resubmitted with a stormwater management plan.

## **SECTION 7. EXISTING LOCATION AND DEVELOPMENTS.**

- (1). Requirements for all existing locations and developments.

The following requirements shall apply to all locations and development at which land disturbing activities have occurred previous to the enactment of this ordinance:

- (a) Denuded areas must be vegetated or covered under the standards and guidelines specified in the BMP manual and on a schedule acceptable to the City of Greenbrier.

- (b) Cuts and slopes must be properly covered with appropriate vegetation and/or retaining walls constructed.
- (c) Drainage ways shall be properly covered in vegetation or secured with rip-rapp, channel lining, etc., to prevent erosion.
- (d) Trash, junk, rubbish, etc. shall be cleared from drainage ways.
- (e) Stormwater runoff shall be controlled to the extent reasonable to prevent pollution of local waters. Such control measures may include, but are not limited to, the following:
  - (1) Ponds
    - (a) Detention pond
    - (b) Extended detention pond
    - (c) Wet pond
    - (d) Alternative storage measures
  - (2) Constructed wetlands
  - (3) Infiltration systems
    - (a) Infiltration/percolation trench
    - (b) Infiltration basin
    - (c) Drainage (recharge) well
    - (d) Porous pavement
  - (4) Filtering systems
    - (a) Catch basin inserts/media filter
    - (b) Sand filter
    - (c) Filter/absorption bed

- (d) Filter and buffer strips
  - (5) Open channel
    - (a) Swale
- (2). Requirements for existing problem locations. The City of Greenbrier shall in writing notify the owners of existing locations and developments of specific drainage, erosion or sediment problem affecting such locations and developments, and the specific actions required to correct those problems. The notice shall also specify a reasonable time for compliance.
- (3). Inspection of existing facilities. The City of Greenbrier may, to the extent authorized by state and federal law, establish inspection programs to verify that all stormwater management facilities, including those built before as well as after the adoption of this ordinance, are functioning within design limits. These inspection programs may be established on any reasonable basis, including but not limited to: routine inspections; random inspections; inspections based upon complaints or other notice of possible violations; inspection of drainage basins or areas identified as higher than typical sources of sediment or other contaminants or pollutants; inspections of businesses or industries of a type associated with higher than usual discharges of contaminants or pollutants or with discharges of a type which are more likely than the typical discharge to cause violations of the municipality's NPDES stormwater permit; and joint inspections with other agencies inspecting under environmental or safety laws. Inspections may include, but are not limited to: reviewing maintenance and repair records; sampling discharges, surface water, groundwater, and material or water in drainage control facilities; and evaluating the condition of drainage control facilities and other BMPs.

- (4). Corrections of problems subject to appeal. Corrective measures imposed by the stormwater utility under this section are subject to appeal under §11 of this ordinance.

## **SECTION 8. ILLICIT DISCHARGES.**

(1). Scope.

This section shall apply to all water generated on developed or undeveloped land entering the municipality's separate storm sewer system.

(2). Prohibition of illicit discharges.

No person shall introduce or cause to be introduced into the municipal separate storm sewer system any discharge that is not composed entirely of stormwater. The commencement, conduct or continuance of any non-stormwater discharge to the municipal separate storm sewer system is prohibited except as described as follows:

(a) Uncontaminated discharges from the following sources:

- (1) Water line flushing or other potable water sources,
- (2) Landscape irrigation or lawn watering with potable water,
- (3) Diverted stream flows,
- (4) Rising ground water,
- (5) Groundwater infiltration to storm drains,
- (6) Pumped groundwater,
- (7) Foundation or footing drains,
- (8) Crawl space pumps,
- (9) Air conditioning condensation,
- (10) Springs,
- (11) Non-commercial washing of vehicles,

- (12) Natural riparian habitat or wet-land flows,
  - (13) Swimming pools (if dechlorinated - typically less than one PPM chlorine),
  - (14) Fire fighting activities, and
  - (15) Any other uncontaminated water source.
- (b) Discharges specified in writing by the City of Greenbrier as being necessary to protect public health and safety.
  - (c) Dye testing is an allowable discharge if the City of Greenbrier has so specified in writing.
- (3). Prohibition of illicit connections.
- (a) The construction, use, maintenance or continued existence of illicit connections to the separate municipal storm sewer system is prohibited.
  - (b) This prohibition expressly includes, without limitation, illicit connections made in the past, regardless of whether the connection was permissible under law or practices applicable or prevailing at the time of connection.
- (4). Reduction of stormwater pollutants by the use of best management practices.
- Any person responsible for a property or premises, which is, or may be, the source of an illicit discharge, may be required to implement, at the person's expense, the BMP's necessary to prevent the further discharge of pollutants to the municipal separate storm sewer system. Compliance with all terms and conditions of a valid NPDES permit authorizing the discharge of stormwater associated with industrial activity, to the extent practicable, shall be deemed compliance with the provisions of this section.
- (5). Notification of spills.

Notwithstanding other requirements of law, as soon as any person responsible for a facility or operation, or responsible for emergency response for a facility or operation has information of any known or suspected release of materials which are resulting in, or may result in, illicit discharges or pollutants discharging into stormwater, the municipal separate storm sewer system, the person shall take all necessary steps to ensure the discovery, containment, and cleanup of such release. In the event of such a release of hazardous materials the person shall immediately notify emergency response agencies of the occurrence via emergency dispatch services. In the event of a release of non-hazardous materials, the person shall notify the City of Greenbrier in person or by telephone or facsimile no later than the next business day. Notifications in person or by telephone shall be confirmed by written notice addressed and mailed to the City of Greenbrier within three (3) business days of the telephone notice. If the discharge of prohibited materials emanates from a commercial or industrial establishment, the owner or operator of such establishment shall also retain an on-site written record of the discharge and the actions taken to prevent its recurrence. Such records shall be retained for at least 7 years.

## **SECTION 9. ENFORCEMENT**

### **(1). Enforcement authority.**

The Building and Codes Official of the City of Greenbrier shall have the authority to issue notices of violation and citations, and to impose the civil penalties provided in this section.

### **(2). Notification of violation.**

#### **(a) Written Notice.**

Whenever the Building and Codes Official of the City of Greenbrier finds that any permittee or any other person discharging stormwater has violated or is violating this ordinance or a permit or order issued hereunder, the director may serve upon such person written notice of the violation. Within ten (10) days of this notice, an explanation of the violation and a plan for the satisfactory correction and prevention thereof, to include specific required actions, shall be submitted to the director. Submission of this plan in no way relieves the discharger of liability for any violations occurring before or after receipt of the notice of violation.

(b) Consent Orders.

The Building and Codes Official is empowered to enter into consent orders, assurances of voluntary compliance, or other similar documents establishing an agreement with the person responsible for the noncompliance. Such orders will include specific action to be taken by the person to correct the noncompliance within a time period also specified by the order. Consent orders shall have the same force and effect as administrative orders issued pursuant to paragraphs (d) and (e) below.

(c) Show Cause Hearing.

The director may order any person who violates this ordinance or permit or order issued hereunder, to show cause why a proposed enforcement action should not be taken. Notice shall be served on the person specifying the time and place for the meeting, the proposed enforcement action and the reasons for such action, and a request that the violator show cause why this proposed enforcement action

should not be taken. The notice of the meeting shall be served personally or by registered or certified mail (return receipt requested) at least ten (10) days prior to the hearing.

(d) Compliance Order.

When the director finds that any person has violated or continues to violate this ordinance or a permit or order issued there under, he may issue an order to the violator directing that, following a specific time period, adequate structures, devices, be installed or procedures implemented and properly operated. Orders may also contain such other requirements as might be reasonably necessary and appropriate to address the noncompliance, including the construction of appropriate structures, installation of devices, self-monitoring, and management practices.

(e) Cease and Desist Orders.

When the director finds that any person has violated or continues to violate this ordinance or any permit or order issued hereunder, the director may issue an order to cease and desist all such violations and direct those persons in noncompliance to:

- (1) Comply forthwith; or
- (2) Take such appropriate remedial or preventive action as may be needed to properly address a continuing or threatened violation, including halting operations and terminating the discharge.
- (3). Conflicting standards. Whenever there is a conflict between any standard contained in this ordinance and in the BMP manual

adopted by the municipality under this ordinance, the strictest standard shall prevail.

## **SECTION 10. PENALTIES.**

### **(1). Violations.**

Any person who shall commit any act declared unlawful under this ordinance, who violates any provision of this ordinance, who violates the provisions of any permit issued pursuant to this ordinance, or who fails or refuses to comply with any lawful communication or notice to abate or take corrective action by the City of Greenbrier, shall be guilty of a civil offense.

### **(2). Penalties.**

Under the authority provided in Tennessee Code Annotated §68-221-1106, the municipality declares that any person violating the provisions of this ordinance may be assessed a civil penalty by the City of Greenbrier of not less than fifty dollars (\$50.00) and not more than five thousand dollars (\$5,000.00) per day for each day of violation. Each day of violation shall constitute a separate violation.

### **(3). Measuring civil penalties. In assessing a civil penalty, the City of Greenbrier may consider:**

- (a) The harm done to the public health or the environment;
- (b) Whether the civil penalty imposed will be a substantial economic deterrent to the illegal activity;
- (c) The economic benefit gained by the violator;
- (d) The amount of effort put forth by the violator to remedy this violation;
- (e) Any unusual or extraordinary enforcement costs incurred by the municipality;

- (f) The amount of penalty established by ordinance or resolution for specific categories of violations; and
- (g) Any equities of the situation which outweigh the benefit of imposing any penalty or damage assessment.

(4). Recovery of damages and costs.

In addition to the civil penalty in subsection (2) above, the municipality may recover;

- (a) All damages proximately caused by the violator to the municipality, which may include any reasonable expenses incurred in investigating violations of, and enforcing compliance with, this ordinance, or any other actual damages caused by the violation.
- (b) The costs of the municipality's maintenance of stormwater facilities when the user of such facilities fails to maintain them as required by this ordinance.

(5). Other remedies.

The municipality may bring legal action to enjoin the continuing violation of this ordinance, and the existence of any other remedy, at law or equity, shall be no defense to any such actions.

(6). Remedies cumulative.

The remedies set forth in this section shall be cumulative, not exclusive, and it shall not be a defense to any action, civil or criminal, that one (1) or more of the remedies set forth herein has been sought or granted.

## **SECTION 11. APPEALS.**

Pursuant to Tennessee Code Annotated §68-221-1106(d), any person aggrieved by the imposition of a civil penalty or damage assessment as provided by this ordinance may appeal said penalty or damage assessment to the municipality's governing body.

(1). Appeals to be in writing.

The appeal shall be in writing and filed with the municipal recorder or clerk within fifteen (15) days after the civil penalty and/or damage assessment is served in any manner authorized by law.

(2). Public hearing.

Upon receipt of an appeal, the municipality's governing body shall hold a public hearing within thirty (30) days. Ten (10) days prior notice of the time, date, and location of said hearing shall be published in a daily newspaper of general circulation. Ten (10) days notice by registered mail shall also be provided to the aggrieved party, such notice to be sent to the address provided by the aggrieved party at the time of appeal. The decision of the governing body of the municipality shall be final.

(3). Appealing decisions of the municipality's governing body. Any alleged violator may appeal a decision of the municipality's governing body pursuant to the provisions of Tennessee Code Annotated, title 27, chapter 8.

**BE IT ENACTED** by the Board of Mayor and Aldermen of Greenbrier, Tennessee that this ordinance shall take effect from and after its passage, the city requiring it.

Passed this \_\_\_\_\_ day of \_\_\_\_\_, 2010

Recommended by Planning Commission: \_\_\_\_\_

1<sup>st</sup> Reading : \_\_\_\_\_

Public Hearing: \_\_\_\_\_

2<sup>nd</sup> Reading : \_\_\_\_\_

\_\_\_\_\_  
Mayor Billy Wilson

Attest: \_\_\_\_\_

City Recorder

Current

# 01- 03

## STORMWATER MANAGEMENT ORDINANCE

### AN ORDINANCE REGULATING THE RATE OF STORMWATER DISCHARGE FROM PROPOSED DEVELOPMENTS WITHIN THE TOWN OF GREENBRIER AND REQUIREMENTS FOR STORMWATER RETENTION AND DETENTION

**WHEREAS**, continued commercial, industrial, and residential development of property is desirable and beneficial to the Town of Greenbrier; and,

**WHEREAS**, adequate drainage of existing developments and future developments is a necessary aim of the Town of Greenbrier; and,

**WHEREAS**, it is the desire of the Town of Greenbrier to preserve and promote the public health, safety, morals, and general welfare of the inhabitants of the Town of Greenbrier through the proper use of regulations and regulatory authority; and,

**WHEREAS**, Unregulated and uncontrolled stormwater run-off from desirable development can damage the public health, safety, and general welfare of the inhabitants of the Town of Greenbrier; and,

**WHEREAS**, a reasonable balance must be struck whereby proposed development is encouraged while requiring management of their stormwater in such a way as to protect the public health, safety, and general welfare of the inhabitants of the Town of Greenbrier and the public-at-large; and,

**WHEREAS**, this reasonable balance can be struck by regulations requiring management practices which control the rate of stormwater run-off, the quality of stormwater run-off, and the negative impacts of run-off through volume or velocity on downstream property owners or the public-at-large;

**NOW, THEREFORE, BE IT ORDAINED** by the Mayor and the Board of Aldermen of the Town of Greenbrier, Tennessee:

#### I. PURPOSE - STORMWATER MANAGEMENT ORDINANCE

The purpose of this ordinance is to provide the basis for achieving the adopted Town goals and objectives defined below:

To diminish threats to public health, safety and general welfare caused by the run-off of excessive stormwater;

To reduce economic losses to individuals and the community-at-large;

To protect, conserve, and promote the orderly development of land, water, and all natural resources.

To ensure the safety of the Town's streets and rights-of way from flood dangers;

To foster the development of the best possible land uses within the boundaries of the Town of Greenbrier;

To minimize future operational and maintenance costs to the people of the Town of Greenbrier;

To help preserve the environmental quality, social well-being, and economic stability of the Town of Greenbrier;

To provide for corrective works which are consistent with the overall goals, policies, standards, and criteria of the Town of Greenbrier.

The provisions of this ordinance further regulate, guide, and control:

- A. The subdivision layout, redevelopment, and improvement of lands located within the Town of Greenbrier.
- B. The construction of buildings and drainage of the sites on which structures are located, including parking and other paved areas.
- C. The design, construction, and maintenance of stormwater drainage facilities and systems.

## II. GENERAL STANDARDS

### A. Definitions

Design Year Storm – The Design Year Storm is a statistical definition of the percent chance that a storm has of occurring in any given year. That year should not be considered as an actual number of years between occurrences. For example, the "100-year flood" is not the flood that will occur once every 100 years. Rather, it is the flood elevation that has a 1-percent chance of being equaled or exceeded each year. Thus, the 100-year flood could occur more than once in a relatively short period of time. The 100-year flood, which is the standard used by most Federal and State agencies, is used by the National Flood Insurance Program as the standard for floodplain management and to determine the need for flood insurance.

100-Year Storm - For the purpose of this ordinance the "100-year flood" shall be defined as the rainfall event which has a 1% chance of occurring in any given year.

10-Year Storm - For the purpose of this ordinance the "10-year flood" shall be defined as the rainfall event which has a 10% chance of occurring in any given year.

2-Year Storm - For the purpose of this ordinance the "2-year flood" shall be defined as the rainfall event which has a 50% chance of occurring in any given year.

Bypass Channels -- Bypass Channels are channels which are used to pass flows from upstream of the property through the property without impacting on site stormwater management facilities.

Emergency Spillway -- The secondary means through which water exits from a detention or retention basin. The emergency spillway will have flows on an relatively rare basis and will be designed to keep the detention structure from overtopping during the 100-year storm.

Flooding Problem - For the purpose of this ordinance, "flooding problem" will be defined as any one of the following:

1. A building or structure where the pre-development 100-year flood elevation is more than 1 foot below finished floor elevation and the post-development 100-year flood elevation is less than 1 foot below finished floor elevation;
2. A road, driveway, or culvert for which the pre-development 100-year flood elevation was below the elevation of the subgrade and the post-development 100-year flood elevation is above the elevation of the subgrade;
3. A road, driveway, or culvert for which the pre-development 100-year flood elevation did not overtop the facility and the post-development 100-year flood elevations does overtop the facility;
4. A building or structure where the pre-development 100-year flood elevation was below the finished floor elevation and the post-development flow is above the finished floor elevation;
5. A building, structure, road, walk, or drive where the pre-development 100-year flood elevation was less than 2 feet deep and the post-development 100-year flood elevation is greater than 2 feet deep;
6. A building, structure, road, walk, or drive where the pre-development 100-year flow velocity was less than 2 feet per second in the pre-developed condition and is greater than 2 feet per second in the post-developed condition.

Freeboard – The freeboard is the height from the top of dam to the permanent pool water surface elevation in a retention structure.

Impact Basins (Energy Dissipators) – Structures utilized to slow water down and control its velocity or to spread water out and control its regime.

NRCS (or SCS) TR-55 – United States Department of Agriculture, Natural Resources Conservation Service, Engineering Division, Technical Release 55, dated June 1986, *Urban Hydrology for Small Watersheds*

Peak Flow – The maximum rate of flow at a specific point through the duration of a rainfall and run-off event.

Principle Spillway – The primary means through which water exits from a detention or retention basin. The principle spillway will have flows on a regular basis and will be designed accordingly.

SCS TR-55 – See NRCS (or SCS) TR-55

Stormwater Detention - A surface water run-off storage facility that is normally dry but is designed to hold (detain) surface water temporarily during and immediately after a run-off event. Examples of detention basins include but are not limited to: natural swales with crosswise earthen berms, constructed or natural surface depressions, subsurface tanks, pipes or reservoirs.

Stormwater Retention - A pond or basin which always contains (retains) a substantial volume of water to serve recreational, aesthetic, water supply, or other functions.

Stormwater Retention/Detention Basin: a pond or basin which provides for the permanent storage of water while utilizing the freeboard above the permanent pool elevation for detention of stormwater run-off.

Stormwater Run-Off – The amount of water which leaves a site or area in direct correlation to a rainfall event.

Wet Pond – That portion of a retention or retention/detention basin which permanently stores water.

## B. Applicability and Exceptions

This ordinance shall be applicable within the Town of Greenbrier's jurisdictional area and shall apply to any residential development which is a portion of a piece

of property of five acres or more or any non-residential development which is a portion of a piece of property which is three acres or more. This ordinance shall also apply to any residential development of less than five acres or any non-residential development of less than three acres but having 50% or greater impervious surface.

C. Regulations Governing Rate of Run-off

- i. Rate of run-off shall be determined at each point where run-off leaves the property being developed in its pre-development state;
- ii. The Stormwater Management System shall be designed so that the Peak Flow Rate at any exit point in the post-developed condition shall be less than or equal to the Peak Flow Rate for that exit point in the pre-developed condition for the 2-year and 10-year / 24 hour storms;
- iii. In addition to the Peak Flow requirement listed above, it shall be the responsibility of the developer and his engineer to ensure that the run-off of the 100-year storm event does not create a flooding problem downstream.

D. Regulations Regarding Bypass of Upstream Flows

- i. If it is desired by the developer of a piece of property to pass upstream flows through the property through means of a drainageway physically separated from the Stormwater Management System of the development, this is an acceptable practice;
- ii. The bypass drainageway must be designed to pass the 100-year / 24 hour storm without overtopping;
- iii. The bypass drainageway must exit the property in the post-developed condition at the same location as the drainage from that upstream basin exited the property in the pre-developed condition;
- iv. The bypass drainageway must have approximately the same flow exiting the property as it did entering the property or must be included in the calculations for the overall Stormwater Management Plan for the development;
- v. In addition to the Peak Flow requirement listed above, it shall be the responsibility of the developer and his engineer to ensure that any change in timing of the run-off of the 100-year storm event does not create a flooding problem downstream from the property.

### III. TECHNICAL STANDARDS

#### A. Detention Basins

##### i. Storage Volumes

The detention basin shall provide storage sufficient to control the excess run-off from the 2-year and 10-year / 24 hour storms;

##### ii. Impact Basins (Energy Dissipators)

Impact basins will be required for any detention basin where the depth from the emergency spillway elevation to the bottom of the basin is greater than five feet.

##### iii. Emergency Spillways (ESW)

Whenever possible, emergency spillways should be constructed in cut conditions and should not be provided over the dam embankment. In the event that a ramp spillway (a spillway over the embankment) is required by site conditions, this spillway must be paved using either concrete or riprap from the beginning of the control section to at least five feet past the downstream toe of dam. Emergency spillways must be open channels and may not be pipes. The control section of the ESW must be a section which is level in profile, is set at the ESW elevation, and is at least ten feet long in profile. Vegetative cover must be established over all unpaved portions of the ESW. The ESW must be designed to pass the 100-year / 24-hour storm event in the event that the principle spillway gets clogged.

##### vii. Downstream Channels

Calculations must be provided showing the capacity of downstream channels to handle the rate and velocity of flow from the detention basin. These calculations shall model the channel at the downstream property line of the development.

##### viii. Proximity of Detention Basins to Existing or Proposed Home

In the event that a detention basin is located on property which is dedicated to an individual homeowner, the rear yard setback as required in the Zoning Ordinance will be applied to the required detention easement line. In other words the stormwater detention facility must be set back from the house so that the homeowner has a rear yard (unencumbered by detention pond or easement) as required by the Zoning Ordinance between the rear of the house and the edge of the detention easement.

## V. IMPROVEMENT REGULATIONS

### A. Easements

Easements will be required over all basins and stormwater conveyances which are involved in the conveyance of stormwater through or from the property. Said easements will be in a format which meets the requirements of the Town of Greenbrier. The existence of easements provides right of access to the Town only. It is not intended to imply any responsibility on the part of the Town of Greenbrier for the maintenance or upkeep of private facilities.

### B. Maintenance of Facilities

The developer or property owners shall be responsible for the maintenance of all improvements. All improvements shall be maintained in perpetuity and cannot be developed for any other use which would limit or cause to limit the use of the improvements. Each property owner shall, within the contents of his deed, be liable for the combined maintenance of the improvements. A special note to this effect shall appear on the final plat of subdivision or any plat of condominium and their declarations.

When problems arise due to inadequate maintenance, the Public Works Director or his Agent of the Town of Greenbrier may inspect the improvements and compel the correction of the problem by written notice. Should the Property Owners fail to comply with the written notice, the Town of Greenbrier may enter the facility as needed and provide the necessary maintenance and may then charge the Property Owners all reasonable charges incurred by the Town for said maintenance. Should these charges not be paid, the Town of Greenbrier will place a lien against all properties in the subdivision until such time as the outstanding balance is paid in full.

The Town of Greenbrier which the Town accepts to be dedicated to the Town and located in dedicated public rights-of-way. Please see Section C following for details of what constitutes a facility which the Town will consider for dedication.

### C. Dedication of Facilities

Whenever drainage facilities are planned to service several projects or a specific area deemed necessary by the Town of Greenbrier, the drainage facilities may be dedicated to the Town. If the Town of Greenbrier agrees that these facilities benefit inhabitants of the Town of Greenbrier outside of the development or improve the public welfare, the Town of Greenbrier will maintain these facilities. In these cases, access easements must be provided to the City.

#### D. Final Approval of Facilities

Prior to transfer of the maintenance responsibility for these facilities from the developer to the Property Owners, the developer shall provide to the Town a certification signed by a registered professional engineer stating that the facilities are:

- i. Complete;
- ii. Built as per the approved plans.

When facilities are not complete or are not constructed as per the approved plans, the Town of Greenbrier has explicit authority to compel compliance and have any situations corrected which are not according to the approved plans. Failure to comply with the above could result in monetary penalties as outlined in this ordinance, holding of use and occupancy permits by the Town, or utilization of performance bonds by the Town to complete the construction. All drainage facilities whether dedicated to the Town or not shall have an implicit right of access by duly authorized Town Officials. This section does not obligate the Town of Greenbrier to any inspection and does not warrant that any inspection is done by the Town.

#### E. Waiving of Detention Requirements

The requirements for on-site detention facilities may be waived by the Town of Greenbrier if one of the following is determined:

- i. The development of detention at the location in question would be detrimental to the stormwater management patterns of the general area. A technical study of the area will have to be prepared and submitted to the Town of Greenbrier which shows the stormwater flows of the area along with the peak flows in the pre-developed, post-developed without detention, and post-developed with detention states;
- ii. Engineering, aesthetic, or economic factors make a regional facility more practical for construction by the Town.

### VI. FEE-IN-LIEU OF ONSITE DETENTION

If the Town of Greenbrier determines that it is in the best interest of the people of the Town to waive the requirement for onsite detention for a specific project, the Town will assess a fee-in-lieu of detention. The Town will use either a published rate of calculation for said fee or shall negotiate a fee with the developer. The ability of the Town to waive this requirement does not imply any right on the part of the developer to avoid construction of on-site detention. Such a waiver is at the sole discretion of the Town of

Greenbrier and must be clearly demonstrable to meet all of the technical criteria of this ordinance.

## VII. MISCELLANEOUS

1. Penalties for Violation - In the event that a development is found to be in violation of this Ordinance, a notice-of-violation will be sent by certified mail to the developer. This letter will state the nature of the violation and will request that the developer meet with the Town of Greenbrier to determine a plan and schedule for corrective action.

In the event that a plan and schedule of corrective action is not in place within 15 calendar days of the original notice, a stop work order will be issued by the Town for all work associated with the development. The contractor will be notified of the stop work order on site and the developer will be notified via certified mail.

In the event that a plan and schedule of corrective action is not in place and the implementation of the corrective action plan has not begun within 30 days, the developer will be found to be in violation of the terms and provisions of this Ordinance and shall be guilty of a misdemeanor and subject to a minimum fine of \$500 and a maximum fine of \$500 per day until the corrective action plan is accepted, implementation is begun, and it is on schedule. In addition to the fines, the developer may be imprisoned for up to 90 days.

2. Validity - If any term or provision of this Ordinance shall be held to be unconstitutional or otherwise unenforceable, the remainder thereof shall not be affected thereby and shall remain in full force and effect.
3. Conflict - All ordinances heretofore adopted on the subject of this Ordinance which are in conflict herewith are hereby repealed and the applicable provisions of the Ordinance are substituted in their place.
4. Variances - The Mayor and Board of Aldermen shall have the power through a two-thirds majority vote to authorize variances from the provisions or requirements of this Ordinance as will not be contrary to the public interest. No variance from the strict application of any provision shall be granted unless it is found that:
  - a. Literal interpretation of this Ordinance would in any way pose a threat to public health or safety;
  - b. Granting of the variance will be in the overall best interest of the citizens of the Town of Greenbrier and will not be injurious to the immediate neighborhood or otherwise detrimental to the public welfare.

VIII. REPEALING CLAUSE

All Ordinances or Resolutions of the Mayor and Board of Aldermen of the Town of Greenbrier that conflict with the provisions of this Ordinance shall be, and the same are hereby repealed, and rescinded, but only to the extent of such conflict.

IX. SEVERABILITY

If any provision of this Ordinance is determined by a court of competent jurisdiction to be invalid or otherwise unenforceable, such findings shall not effect the other provisions hereof which shall remain in full force and effect.

X. EFFECTIVE DATE

This Ordinance shall become effective as provided by law.

1st Reading	2-5-01
Public Hearing	3-5-01
2nd Reading	3-5-01

Rosanne Orlov

Dandra J. Head